



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,189	07/23/2003	Junzhong Liang	0092050_DIV3	1261

7590 01/13/2006

Allen, Dyer, Doppelt, Milbrath & Gilchrist, P.A.
Suite 1401
255 South Orange Avenue
P.O. Box 3791
Orlando, FL 23802-3791

EXAMINER

SANDERS JR, JOHN R

ART UNIT PAPER NUMBER

3735

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Then

Office Action Summary	Application No.	Applicant(s)	
	10/625,189	LIANG ET AL.	
	Examiner	Art Unit	
	John R. Sanders	3735	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 30 September 2005 have been fully considered but they are not persuasive. Applicant alleges that Liang '94 "neither teaches nor suggests the emission of secondary radiation from the retina as a reflected wavefront of radiation that passes through the eye, nor means for directing the reflected wavefront onto a wavefront analyzer, nor a wavefront analyzer for measuring distortions associated with the reflected wavefront." [Applicant's response, III, ¶ 3). Examiner respectfully disagrees.
2. Liang '94 clearly teaches a laser which imparts a beam to the retina of the eye (fig. 5). The reflection of the laser beam off of the retina is inherently a secondary radiation source which projects a wavefront that passes through the eye. This wavefront is clearly reflected by beamsplitter (B2) to impinge upon a Hartmann-Shack wavefront sensor (HSS, CCD camera and associated computer). Focusing means (L1) is capable of moving the focal point of the incident laser beam forward or backward along the optical axis with respect to the retina.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 3735

3. Claims 1, 5 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by “Objective measurement of wave aberrations of the human eye with the use of a Hartmann-Shack wave-front sensor”, J. Opt. Soc. Am. A, Vol. 11, No.7, July 1994 (“Liang ’94”).

Re claims 1 and 5: Liang ’94 discloses a wavefront analyzer with focusing means L1 (fig. 5) that is capable of moving the focal point of the incident laser beam forward or backward along the optical axis with respect to the retina. Liang ’94 is therefore capable of focusing the optical beam proximate a posterior such that the focal surface is other than the posterior surface.

Re claim 6: Liang ’94 further discloses a shutter (fig. 5).

4. Claims 1-21 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Publication No. 2001/0041884 to Frey et al. (“Frey”).

5. Frey discloses a wavefront measurement apparatus comprising focusing means in the form of a long-focal-length zoom lens (394) capable of focusing an optical beam at different focal points within the surfaces of the eye. Frey discloses said lens as a half-meter lens or a 100-mm lens (¶ 158-160). Frey discloses a polarized laser light source and a polarization sensitive beam splitter (¶ 161). Frey teaches an aperture array plate and CCD camera wavefront sensor arrangement commiserate in scope with the instant claims (fig. 4). Frey teaches a camera (338) and a fixation target (366).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 3735

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-4 and 7-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liang '94 in view of Frey.

Re claims 2-4, 14 and 15: Liang '94 does not expressly disclose a long-focal length lens comprising at least a 100-mm lens, a half-meter lens, or a zoom lens. Frey teaches a long-focal length lens (394) comprising, in different embodiments, a half-meter lens, a 100-mm lens (§ 160) and a zoom lens (§ 159) for projecting an optical beam for providing a spot of radiation on the retina for purposes of wavefront measurement and wherein said lens is capable of moving the focus location as desired. At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the lens L1 of Liang '94 to comprise a long focal length lens in order to focus a smaller spot of radiation on the retina since Frey teaches this to be desirable (§ 160) and to include a zoom lens to enable a change in focal point for the incident radiation.

Re claims 10, 11 and 13: Liang '94 discloses the laser and focusing means as previously discussed, but does not expressly disclose a polarizing means. Frey teaches a polarized laser light source and a polarization sensitive beam splitter commonly used in the art and exemplified by Frey for use in wavefront sensing. At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Liang '94 to have a polarized light source and polarization sensitive beam splitter, as taught by Frey, in order to route the incident and reflected beam paths in a manner known in the art.

Re claims 7, 8, 17 and 18: Liang '94 does not expressly disclose the aperture array plate and CCD camera wavefront sensor arrangement. Frey teaches an aperture array plate and CCD

Art Unit: 3735

camera wavefront sensor arrangement commiserate in scope with the instant claims. At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the wavefront sensor of Liang '94 to that of Frey as both arrangements are functionally capable of measuring an incident wavefront.

Re claims 12, 20 and 21: Liang '94 does not expressly disclose a camera or fixation target. Frey teaches a camera (338) and a fixation target (366). At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Liang '94 to incorporate the camera and fixation target of Frey in order to image the focal plane and have the patient focus at a fixed point, respectively.

Re claim 16: Liang '94 discloses a shutter (fig. 5).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 3735

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John R. Sanders whose telephone number is (571) 272-4742.

The examiner can normally be reached on M-F 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



7 January 2006



ALI IMAM
PRIMARY EXAMINER